Indirect tax aggressiveness and tax reforms: Evidence from a quasi-natural experiment

Shailendra Pandit
University of Illinois at Chicago
Chicago, IL, United States
Email: shail@uic.edu
Tel: +1 (312) 355-1331

Mehul Raithatha
Indian Institute of Management-Indore
Indore, India
Email: mehulr@iimidr.ac.in
Tel: +91 (731) 243-9588

Stephanie Sikes
University of Illinois at Chicago
Chicago, IL, United States
Email: ssikes@uic.edu
Tel: +1 (312) 355-4245

September 2018

We gratefully acknowledge comments from Michael Alles (discussant), Robert Chirinko, Suresh Govindraj, Michael Kirschenheiter, Wayne Landsman, Christopher Williams, and participants in the 1st Journal of Accounting, Auditing and Finance (JAAF) Symposium, 8th EIASM Conference on Current Research in Taxation, and the 2018 Annual Meeting of the American Accounting Association. We are thankful for financial support from the University of Illinois at Chicago, and Indian Institute of Management, Indore.

Indirect tax aggressiveness and tax reforms: Evidence from a quasi-natural experiment

Abstract

We study the incentives to engage in indirect tax aggressiveness and the implications of such actions for shareholder value. We take advantage of recent indirect tax reforms in India to design our study as a two-stage analysis of the antecedents and consequences of indirect tax aggressiveness. Our results suggest that size of the product portfolio, geographical proximity of manufacturing facilities to the headquarters, and the extent of international operations are associated with the propensity to avoid indirect taxes. Further, ownership concentration, membership in business groups, and financial health of the company also affect indirect tax aggressiveness. Firms involved in tax aggressive behavior suffer shareholder value loss when their privileged position comes under risk due to tax reforms, as suggested by the stock price reaction surrounding the tax legislation. Firms endowed with sufficient liquid resources and better-connected firms appear to be able to mitigate the negative consequences suffered by their tax aggressive peers.

JEL Classification: H25, H26; G14; K34; M41, M48.

Keywords: Indirect taxes; *ad valorem* taxes; sales tax; goods and services tax; tax reform; tax aggressiveness; capital market effects.

Indirect tax aggressiveness and tax reforms: Evidence from a quasi-natural experiment

1. Introduction

Taxes play an important role in corporate decisions, affecting choices related to investments, financing, dividends, compensation, and restructuring activities. A large literature studies the motivations for and the consequences of aggressive tax planning (alternatively termed 'tax avoidance' or 'tax aggressiveness' here) undertaken to reduce taxes. Many tax-planning strategies are legal and widely used, such as, taking advantage of allowable income tax deductions or structuring production and distribution operations to reduce indirect taxes such as excise and import duties. However, other strategies such as offshore tax sheltering or underreporting sales range from falling in the 'grey area' to being outright illegal. Although there are potential costs to tax aggressiveness including risks of monetary penalties, reputation loss and imprisonment, in certain cases tax aggressive strategies may have an expected net positive value to shareholders, prompting firms to engage in such activities.

Prior studies examine the motivations for tax aggressiveness and its consequences for a range of stakeholders including managers, shareholders, creditors and the government. Empirical studies in this area face limitations due to the paucity of directly observable measures of tax aggressiveness as well as settings where a causal relation can be established between tax avoidance and its theorized consequences. We focus on tax aggressiveness with particular reference to indirect taxes. We exploit financial reporting requirements and data availability in India to construct a relatively cleaner empirical proxy for indirect tax aggressiveness and relate it to the firm's operational and ownership characteristics. Indian public firms are required to disclose the amount of contingent tax liabilities that arise due to the firm adopting a different tax

position compared with the position undertaken by the tax assessing authority. Recent studies have used income tax contingent liabilities as a proxy for the degree of direct tax aggressiveness. We adapt the above measure for our setting and use the amount of sales tax contingent liabilities as our construct of indirect tax aggressiveness. The recent indirect tax reforms enacted in India, namely, the Goods and Services Tax (GST) Bill, offers us an opportunity to observe firm-level consequences of engaging in indirect tax aggressiveness. Due to acrimonious politics and debate surrounding the legislation, the passage of the Bill was far from certain and, therefore, firms did not have the opportunity to adapt to the new tax regime in anticipation of the legislation. Therefore, we treat the legislation as an exogenous shock to the system and use it to identify the relationship between indirect tax aggressiveness and the firm-level stock price reaction to the passage of the Bill.

In the context of income taxes, tax aggressiveness is focused on lowering the firm's income tax liability by reducing taxable income or taking advantage of other deductions and tax breaks. Direct taxes, however, are only a part of the firm's overall tax exposure. Firms are also responsible for a variety of indirect taxes including sales tax, excise, and customs and import duties (in our sample, the average amount of indirect taxes is more than double the average amount of direct tax expense). In the case of many *ad valorem* taxes, such as the sales tax, firms collect such taxes from the end customer and pass these taxes on to appropriate taxing authorities. Sales taxes are not deducted as an expense in the firm's income statement and, therefore, any potential savings of such indirect taxes does not directly affect the firm's net income. However, indirect taxes raise the final price to the end consumer and shift the demand curve, adversely affecting the firm's revenues and profitability. Indirect tax avoidance is quite

pervasive in many developed and developing economies.[1] In extreme cases, firms do not register for VAT or underreport sales, allowing such firms to offer lower net prices to their customers (as well as save on income taxes on unreported income). While such strategies are a clear violation of tax laws and, therefore, likely to invite penalties and legal action, there is evidence that even in developed economies firms engage in such tax evasion. A more common situation is where firms seek to reduce the incidence of indirect taxes or delay the collection or pass-through of indirect taxes from the end customer. Even if the firm's tax position is ultimately overturned, the firm is often only required to pay back taxes with a moderate interest or penalty. In the interim period, cash conserved through tax avoidance serves as a relatively cheap source of financing. In sum, firms can benefit from aggressive indirect tax planning, particularly when indirect tax laws are complicated and differences of opinion exist on the applicability of tax rules.

We examine various incentives to engage in indirect tax aggressiveness. Using contingent tax liabilities arising from sales tax disputes with the government as an empirical proxy for indirect tax aggressiveness, we find that firms with greater product variety are more likely to avoid sales taxes. Also, firms with greater geographical concentration of their physical plant locations in the proximity of the headquarters, and those with a greater degree of domestic operations (as opposed to international operations), are likely to have greater disputed sales tax liabilities. The above results are consistent with features of the operational structure of certain firms allowing them greater opportunities for indirect tax avoidance.

[1] There is a large literature on tax evasion (see, e.g., Sandmo, 2005 for a review). In the specific context of indirect taxes, Marrelli (1984), Virmani (1989), Gordon (1990), Cremer and Gahvari (1999), and Besfamille, De Donder and Lozachmeur (2013) model tax evasion through unreported (cash) sales and other means, and the effect of such evasion on production efficiency and social welfare. Empirical studies, such as, Nam, Parsche, and Schaden (2001) and Keen and Smith (2007) document widespread noncompliance with Value Added Tax (VAT) rules, including tax evasion and fraud, in the European Union. Besfamille et al. (2013) also review noncompliance in Latin America.

Our results also suggest complementarity between direct and indirect tax aggressiveness. Specifically, we find that firms with higher levels of book-tax difference, a widely used empirical proxy for income tax avoidance, are also more likely to have contingent sales tax liabilities. Also, firms that pay their auditors for tax-related advice are more likely to engage in indirect tax aggressiveness. Collectively, the above findings suggest that firms incur significant expenditures to take advantage of tax-related expertise of their auditors which helps them avoid both direct and indirect taxes.

We exploit features of the Indian business environment, which are also endemic to other emerging economies such as China and South Korea, to study how ownership concentration and systemic entrenchment influence the propensity to avoid indirect taxes. Specifically, we find that entrenched firms, as evidenced by higher promoter (controlling shareholder) ownership and firm affiliation with business groups, are more likely to engage in indirect tax aggressiveness. Finally, firms with relatively poorer financial health are more likely to avoid indirect taxes.

Examining the factors behind indirect tax aggressiveness not only sheds light on this relatively unexplored area, but also helps us strengthen our identification strategy when it comes to examining the consequences of avoiding indirect taxes. In addition to designing an event study around an exogenous regulatory shock, we also develop a two-stage estimation strategy in the spirit of prior studies such as Alm, Blackwell and McKee (2004) to examine the relation between tax aggressiveness and its shareholder value effects.[2] In August 2016, the Indian Parliament unexpectedly passed a Goods and Services Tax (GST) Bill that vastly simplified the previously complicated indirect tax regime. Since the tax reforms were largely unanticipated and affected all

[2] Alm et al. (2004) examine firms' propensity to be selected for sales tax audits by the state sales tax authority. They use a two-stage model to first estimate the taxing authority's audit selection rule, and then, conditional upon audit selection, the firm's sales tax compliance choice.

firms in India, the legislation can be treated as an exogenous shock to the economy, allowing us to design an event study using the cross-sectional variation in the firm-level stock price reaction to the reform. The GST Bill aims to replace a broad range of indirect taxes in India such as sales tax, excise, and other local and municipal taxes, with a single Goods and Services Tax (GST), that is supposed to be uniformly and consistently applied across various state and local tax jurisdictions. As a result of the above simplification of indirect tax rules, consumers are likely to benefit from avoiding the cascading effect of 'tax-on-tax' under the prior regime, and sellers are likely to benefit due to lower compliance costs. However, simplification of the tax rules could close loopholes previously exploited by tax aggressive firms to reduce their indirect tax burden. For such firms, the GST Bill could actually be bad news since the firms would not only be expected to pay outstanding back taxes but would also forego future opportunities to engage in indirect tax manipulation. Therefore, for tax aggressive firms the GST Bill acts as an external shock that jeopardizes the firm's indirect tax-related rent seeking opportunities.

We use the firm-level stock price reaction over a narrow time window surrounding the passage of the GST Bill as a proxy for the net effects of the tax reform on shareholder value. Consistent with our expectation, we find that firms with a greater degree of indirect tax aggressiveness experience more negative abnormal stock returns. This result is robust to alternative test specifications, such as a two-stage Heckman model and regression discontinuity design, thus allaying concerns over endogeneity and other econometric issues. As in the case of the determinants of disputed tax liabilities, we also use features of the Indian economy to examine how variations in the ease of doing business and the probability of tax law enforcement across jurisdictions affects investors' assessment of the net effect of the reforms. Collectively, our evidence sheds light on the incentives for and consequences of indirect tax aggressiveness.

Indirect taxes have received relatively less attention compared with direct taxes, particularly with regards to tax avoidance. We contribute to the literature by using disputed (contingent) sales tax liabilities as an empirical proxy for indirect tax aggressiveness, and present evidence on the drivers of such behavior, such as the firm's operational structure, tax avoidance synergies, ownership concentration and systemic entrenchment. Further, while there is prior evidence on the costs of tax aggressiveness, studies in this area face limitations due to the endogenous relationship between factors driving tax choices and shareholder wealth effects of the firm's tax strategy. A significant and unexpected tax reform such as the GST Bill in India not only provides an econometrically robust setting to test the consequences of tax aggressiveness, but also allows us to exploit features of a prominent emerging market economy and provide insights on which types of firms lose when their rent seeking opportunities are taken away.

2. Institutional Background and Prior Literature

2.1 Indirect Tax Aggressiveness

Tax aggressiveness is generally defined as an arrangement or scheme with the purpose of avoiding or reducing explicit taxes (see, e.g., Dyreng, Hanlon and Maydew, 2008; Hanlon and Heitzmann, 2010). As noted in the prior literature, tax aggressiveness does not necessarily indicate that the firm has committed an illegal or improper act. Tax aggressiveness in the context of direct (income) taxes can be viewed as downward management of taxable income through tax-planning activities (Frank, Lynch and Rego, 2009; Chen, Chen, Cheng and Shevlin, 2010; Richardson, Taylor and Lanis, 2013). Direct tax aggressive activities include the shifting of income or profits to offshore tax havens and the excessive claiming of tax deductions, e.g.,

interest and R&D expenses, and tax losses that the corporation is normally not entitled to receive (Graham and Tucker, 2006; Frank et al., 2009; Lanis and Richardson, 2011).

Direct taxes, however, are only a part of the firm's overall tax exposure. Firms are also responsible for a variety of indirect taxes including sales tax, excise, and customs duty. For example, for our sample firms the mean direct tax expense is Indian Rupees (INR) 238.14 million whereas mean indirect taxes amount to INR 551.22 million.[3] The seller collects indirect taxes, which are usually charged on the selling price on *ad valorem* basis, from the consumer on behalf of the taxing authorities. Thus, indirect taxes increase the final price to the consumer and shift the demand curve, leading to deadweight loss.

Prior studies report that indirect taxes not only affect purchasing behavior of consumers (e.g., Poterba 1996, Goolsbee 2000, Ballard and Lee 2007, Stehr 2007, and Anderson, Fong, Simester and Tucker, 2010) but also capacity and location decisions of firms (e.g., Manuszak and Moul, 2009). For example, recent studies such as Hoopes, Thornock and Williams (2016) focus on federal legislative proposals, such as the Marketplace Fairness Act, that aim to remove the preferential treatment given under state-level indirect tax laws to online retailers compared with brick-and-mortar businesses. Hoopes et al. (2016) find negative abnormal stock returns and a reduction in forecasted revenue for online firms following events that indicated an increased likelihood of federal sales tax legislation. Similarly, Baugh, Ben-David and Park (2018) report that after the imposition of sales taxes on online purchases, consumers shift their purchases away from online retailers in favor of brick-and-mortar businesses. In sum, indirect taxes are an important factor affecting both consumer and firm behavior.

Tax aggressiveness with regards to indirect taxes takes a different form compared with

[3] US Dollar 1 = Indian Rupees (INR) 68.21, per the Reserve Bank of India's reference exchange rate as of May 23, 2018.

direct taxes, particularly in a complex indirect tax regime with multiple tax jurisdictions and cascading indirect taxes. Firms can reduce indirect taxes by structuring their business model or production and distribution operations to take advantage of the tax rules. In more extreme cases, firms can choose not to register for VAT, underreport sales (either price or quantity), misclassify commodities, present fraudulent invoices, or collect but not remit indirect taxes to the taxing authorities (Keen and Smith, 2007; Alm, Martinez-Vazquez, and Chandler, 2016).

There is evidence of widespread indirect tax avoidance in developed as well as developing economies. Murray (1995) uses sales tax audit data from Tennessee Department of Revenue and reports that of the 2,178 sales tax accounts in his sample covering the period 1986-1988, 396 (18.2% of the overall sample) were selected for audit with 372 accounts (17.1% of the overall sample, 93.9% of audited accounts) found to be noncompliant. Using Gross Receipt Tax data for New Mexico firms, Alm, Blackwell and McKee (2004) report that the average sales tax compliance rate is only 43% in their sample. The VAT system in the European Union has been the subject of criticism due to the opportunities for indirect tax evasion and fraud. For example, the European Commission (2004) noted that losses from fraud amounted to up to ten percent of net VAT receipts in some member states. More recently, Alm et al. (2016) compile international sales tax evasion data using World Enterprise Survey (WES) and the Business Environment and Enterprise Performance Survey (BEEPS) conducted by the World Bank. Their sample contains approximately 8,000 firms from 32 European countries that responded to the surveys. The average reported sales (i.e., percentage of sales reported for tax purposes) in the sample is about 88.2%, implying sales tax non-compliance rate of about 11.8%. Furthermore, approximately 40.5% of their sample firms report paying bribes to deal with sales tax issues, with the mean amount of the bribe being approximately 1.1% of sales.

In the context of India, the business press and academic researchers have long commented on the vastly complicated indirect tax regime that creates incentives to manipulate and evade indirect taxes (e.g., The Times of India, 2010; Kiran, 2015; Anand, 2017). In a well-publicized recent case, indirect tax authorities detected sales tax evasion amounting to approximately INR 16 billion (approximately US$ 250 million) where sellers provided fake invoices to buyers (Times of India, March 27, 2013). Such indirect tax evasion is not limited to traders and small businesses alone, with well-known firms, such as, Bhushan Steel and Cadbury being under scrutiny for possible indirect tax evasion (The Hindu, 2012, 2013). As another prominent example, state indirect tax authorities took objection to Amazon selling goods on behalf of third-party sellers on its website and imposed steep fines on the company. Amazon successfully appealed the case, however at a significant cost, and was allowed to resume its online selling activities (Asthana, 2014; Nair and Balasubramanyam, 2014).

2.2 Propensity to engage in indirect tax aggressiveness

While the avoidance of income taxes can directly boost the net income, sales tax avoidance is likely to have more indirect effects on firm performance and shareholder value through its effect on the final selling price and, consequently, the firm's revenues. Prior studies have documented the prevalence of indirect tax evasion, but there is limited evidence on factors that cause firms to engage in such behavior. We develop hypotheses regarding operational structure, organizational form and ownership characteristics, and potential synergies between direct and indirect tax avoidance that could prompt firms to pursue indirect tax aggressiveness.

2.2.1 Operational structure

Prior studies examine how multi-product firms realize economic benefits through transfer pricing and other financial strategies in addition to reaping operational synergies (e.g., Hill and

Hoskisson, 1981). Swenson (2001) studies how changes in tariffs and tax rates affect transfer pricing decisions at multinational firms. A greater number of product and service offerings is likely to lead to more opportunities for indirect tax manipulation through transfer pricing and related party transactions. Consistent with the above intuition, we expect that greater diversity in the firm's product portfolio will lead to a higher propensity for indirect tax aggressiveness.

We also examine if geographical concentration of the firm's production facilities near its headquarters affects the firm's indirect tax aggressiveness. There is a large literature on how geographical location affects firm decisions, and in particular, the effect of geographical proximity on collaboration and information sharing (e.g., Lerner, 1995; Coval and Moskowitz, 1999; Massa and Rehman, 2008; Almazan, De Motta, Titman, and Uysal, 2010). We expect that firms with a larger proportion of their manufacturing operations closer to the headquarters can more easily coordinate production in such a way as to reduce the incidence of indirect taxes.

Finally, we examine how the degree to which the firm has international operations affects its indirect tax avoidance. In addition to foreign operations being geographically distant from the headquarters and thus impeding coordination and information flows, overseas sales are also subject to foreign tax jurisdiction that are likely to be less susceptible to manipulations and influence-peddling. Prior studies document positive governance externalities arising from US and European cross listing for emerging economy firms (e.g., Coffee, 2002; Doidge, Karolyi, and Stulz, 2004; Fresard and Salva, 2010). Even for firms that are not cross listed, operations in developed economies are likely to be subject to scrutiny by overseas authorities, in addition to monitoring by other market intermediaries such as security analysts and the business press. Therefore, we expect firms that generate a significant proportion of their income through international operations will have reduced ability to manipulate their indirect taxes.

2.2.2 Synergies between direct and indirect tax aggressiveness

Prior theoretical studies such as Marelli (1984) examine the link between avoidance of direct and indirect taxes, however to our knowledge no empirical study till date has focused in the potential interrelatedness of direct and indirect tax aggressiveness. Several strategies for income tax avoidance, such as complicated transfer pricing schemes, also affect the incidence of indirect taxes. Firms often avail of outside expertise through auditors and tax consultants to set up tax avoidance schemes that could affect both direct and indirect taxes. Therefore, it is reasonable to expect that firms that have incentives or opportunities to engage in direct (income) tax avoidance will also be likely to undertake aggressive indirect tax positions. We test whether direct tax aggressiveness is associated with the propensity to avoid indirect taxes.

2.2.3 Ownership concentration and entrenchment

We also examine how ownership concentration and entrenchment affect a firm's incentives to avoid indirect taxes. Prior studies show that ownership concentration affects firm performance (e.g., Stulz, 1988; Morck, Shleifer and Vishny, 1988; Slovin and Sushka, 1993). In the context of indirect taxes, firms with concentrated ownership are shielded from external disciplining mechanisms, and therefore more likely to be able to exploit tax loopholes. As discussed in Chen et al. (2010) and Hanlon and Heitzmann (2010), firms with concentrated ownership may be more likely to avoid taxes because controlling owners benefit more from the savings. On the other hand, ownership concentration can attenuate agency problems and make owners more sensitive to total costs of tax avoidance including reputation effects and resistance to diversion of tax savings from minority shareholders (Desai and Dharmapala, 2006; Chen et al., 2010; Hanlon and Heitzmann, 2010). On balance, the net effect of ownership concentration on the propensity to engage in indirect tax aggressiveness is an empirical issue.

We also examine whether affiliation with a business group affects indirect tax avoidance. Prior studies such as Khanna and Palepu (2000), and Khanna and Rivkin (2001) note that business groups arise in emerging economies as a response to market imperfections. Business groups help affiliated firms pool financial resources and managerial talent, often acting as internal capital markets, when external institutions are weak or nonexistent. At the same time, business groups also allow for tunneling of resources and are associated with political lobbying and regulatory capture (e.g., Fisman, 2001). We expect that firms affiliated with business groups are more likely to engage in indirect tax avoidance due to the interrelatedness of group firms that provides opportunities for related-party transactions and strategic placement of production and distribution activities, and due to a greater degree of entrenchment in the political economy.

2.2.4 Financial constraints

Prior studies in the context of direct taxes examine the association between financial constraints and cash savings generated through tax planning. Edwards, Schwab and Shevlin (2016) present evidence consistent with an increase in financial constraints leading firms to increase internally generated funds via tax planning. Financially constrained firms are likely to be under pressure to increase revenues as well as conserve cash. By avoiding the incidence of indirect taxes or delaying the collection or pass-through of indirect taxes from the end customer, firms can achieve the above objectives. Therefore, we expect that firms in poor financial health will be more likely to engage in indirect tax aggressiveness.

2.4 Consequences of engaging in indirect tax aggressiveness

There is a large literature on the consequences of income tax avoidance (see, e.g., Hanlon and Heitzmann, 2010, and Graham, Raedy, and Shackelford, 2012 for recent surveys). Prior studies document the costs of direct tax aggressiveness, including imposition of additional taxes,

interest and penalties (e.g., Crocker and Slemrod, 2005). Hanlon and Slemrod (2009) report a negative stock price reaction to news about a firm's involvement in tax shelters.

We study the consequences of indirect tax evasion in the specific context of recent indirect tax reforms in India, namely, the Goods and Services Tax (GST) Bill that was passed in the Parliament of India in August 2016. Prior to the passage of the Bill, Indian firms were governed by a complicated and multi-layered indirect tax regime. The Central (federal) government subjected the supply of goods and services to a variety of taxes, charges and fees including, but not limited to, Central Value Added Tax (CENVAT), service tax, central excise duty, additional customs duty (countervailing duty or CVD), and central surcharges. Various State (provincial) governments further imposed value-added taxes (VAT), state sales tax, entertainment tax, luxury tax, and entry tax. The multiplicity of tax types, jurisdictions and rule complexity increased the compliance burden, reduced operating efficiency, encouraged tax evasion and corruption, and created barriers to entry. While there were ongoing discussions to overhaul the indirect tax regime, efforts to introduce legislation did not come to fruition due to a lack of political consensus on the issue (Joshi and Ray, 2016; Padmanabhan, 2016). Finally, in an unexpected development, the Constitution (One Hundred and Twenty Second Amendment) Act, 2016, popularly known as the Goods and Services Tax (GST) Bill, was passed in the Indian Parliament in August 2016.

The GST Bill was widely hailed by practitioners and the business press as one of the most significant tax reforms in India (Anand, 2017; Abrams, Nayak, and Kala, 2017). The Bill entitles the Central government to tax sale of goods and the States to tax provision of services. The bill also grants the Central government the exclusive right to impose GST on imports and inter-state trade. There are provisions for tax revenue sharing between the Central and State

governments under the Bill. Resolution of any tax related disputes between the Central and State governments is to be carried out by a Dispute Settlement Authority, superseded only by the Supreme Court of India. Through simplification of the tax code and streamlining of the tax administration, the GST Bill represents a complete overhaul of the indirect tax regime in India. On the other hand, the GST Bill institutes formal procedures and documentation requirements (e.g., recording of tax collection at source) that are likely to increase compliance costs. The positive effects of the GST Bill in certain sectors of the economy could also prove to be detrimental to other sectors, at least in the short run. For example, the transportation sector is expected to benefit since GST will subsume multiple local taxes, reduce time at checkpoints, and ease other logistical hurdles. However, due to increased productivity, transportation firms may choose not to expand their fleets, thus negatively affecting vehicle manufacturers.

Finally, there is another aspect of indirect tax harmonization that could impose costs on some businesses even as compliance costs are reduced for others. Some firms may have adapted to the prevailing tax regime by developing expertise in dealing with complicated tax rules. Such firms often hire external tax experts in addition to developing in-house knowhow. Some firms may even cultivate relationships with tax authorities and politicians in order to receive favorable tax treatment. Many firms adopt aggressive tax policies such as disputing the assessed taxes, paying only a part of the overall taxes assessed. If the prevailing indirect tax regime is simplified and compliance is made easier, then such entrenched firms could not only lose their relationship capital but also have fewer avenues to manipulate taxes in the future.

We view the GST Bill as an exogenous shock to the economy and use the stock price reaction of firms to the passage of the Bill as an empirical proxy for the estimated shareholder value change as a result of the indirect tax harmonization and simplification. We expect that

entrenched firms that have engaged in aggressive indirect tax avoidance in the past would stand to lose from the simplification of the tax rules. Therefore, we expect firms with indicators of past tax avoidance to experience negative stock returns when the GST Bill is passed. On the other hand, firms that are better-connected and have sufficient liquid resources would be better able to weather the storm and, therefore, not suffer as much as their other tax-aggressive peers.

We also test how the expected implementation affects the firm's stock price response to the new legislation. In particular, we examine how the likelihood of timely and effective implementation of the new tax rules at the state level affects investor's assessment of value loss for tax aggressive firms. Using the World Bank's Ease of Doing Business rankings of Indian states as a proxy for the quality of state-level governance and the likelihood of enforcement of the tax reforms, we examine whether the firm-level stock price reaction to the GST Bill differs between states with higher governance ratings and those with low governance ratings.

As discussed above, many developing market economies including India have a prevalence of business groups that allow distinct legal entities operating in diverse industries to operate under one umbrella, often engaging in cross-selling and internal capital transfers. We expect firms affiliated to business groups to be able to bear the shock of tax rule change more easily than unaffiliated firms. Therefore, we divide our sample into two partitions, one containing business group firms and the other containing standalone firms, and test whether the stock price reaction to the GST Bill differs systematically across the two sample partitions. Below we describe our empirical research design and the results of our analysis.

3. Empirical Analysis: Propensity to Engage in Indirect Tax Aggressiveness

We implement our empirical analysis in two stages. In the first stage, we investigate factors affecting the propensity to avoid indirect taxes. We use the amount of disputed sales tax contingent liabilities as an empirical proxy for indirect tax aggressiveness and examine how operational and ownership characteristics of the firm drive the level of tax aggressiveness. In the second stage analysis focusing on the cost of tax aggressiveness, we use short-window abnormal stock returns surrounding the passage of the GST Bill as the empirical measure of the firm-level valuation effects arising from the tax reforms. As discussed above, the GST Bill is an exogenous shock that presents a good setting to isolate the wealth effects of tax regulation.

3.1 Research design

We estimate the following regression at the firm level:

$$TAX\_AGGRESSIVE_{i,t} = \alpha_0 + \alpha_1 Prod\_Diversity_{i,t} + \alpha_2 Proximity\_HQ_{i,t} + \alpha_3 Int\_Ops_{i,t} + \alpha_4 Book\_Tax\_Diff_{i,t} + \alpha_5 Tax\_Advice_{i,t} + \alpha_6 Prom\_Hold_{i,t} + \alpha_7 BG_{i,t} + \alpha_8 Z\text{-}Score_{i,t} + Controls + \varepsilon_t \quad (1)$$

The dependent variable in equation (1), *TAX_AGGRESSIVE*, is firm level indirect tax avoidance. Prior studies such as Richardson et al. (2013) use disputed income tax contingent liabilities as an empirical proxy for income tax aggressiveness. We adapt the above measure to our setting and use the amount of contingent liabilities related to sales tax disputes as an empirical proxy for the firm's degree of indirect tax aggressiveness.

Indian Accounting Standard (AS) 29 *Contingent Liabilities, Provisions, and Contingent Assets* requires companies to disclose provisions and contingent liabilities including obligations that could arise in relation with litigations and disputes. Contingent liabilities related to indirect taxes such as sales tax, excise, and customs duty fall under the above disclosure requirements.

For example, Tata Motors, a leading automobile manufacturer, disclosed in its annual report for the fiscal year 2016-2017 that "[t]he total sales tax demands (including interest and penalty), that are being contested by the Company amount to INR 1,057.93 crores[4], which includes INR 11.54 crores in respect of equity accounted investees as at March 31, 2017." (See Exhibit I for details). Accordingly, we define *TAX_AGGRESSIVE* as the amount of contingent (disputed) sales tax liabilities deflated by revenues, averaged over the prior three years.

As discussed in section 2.2, our first independent variable of interest is *Prod_Diversity*, a dummy variable that takes the value 1 if the firm operates in more product segments than the industry median, and 0 otherwise. Consistent with the arguments above, we expect *Prod_Diversity* to have a positive coefficient in the regression of indirect tax aggressiveness. We define our next variable, *Proximity_HQ*, as the proportion of manufacturing facilities that are located in the same state as the firm headquarters. Consistent with geographical proximity enabling better control and information flows, we expect this variable to have a positive coefficient. Finally, we define *Int_Ops* as the proportion of total income that is earned overseas and expect it to have a negative association with indirect tax aggressiveness due to the reduced ability to manipulate indirect taxes in international jurisdictions.

We measure the degree of direct tax aggressiveness as *Book_Tax_Diff*, which is defined as the difference between reporting (book) pre-tax income and taxable income according to tax filings (see, e.g., Manzon and Plesko, 2002). The above measure has been extensively used in the prior literature as an empirical proxy for income tax avoidance.[5] To the extent there are synergies between direct and indirect tax avoidance, *Book_Tax_Diff* will have a positive coefficient. We also capture the level of the firm's outlays in tax planning via *Tax_Advice*, a dummy variable

[4] 1 crore = 10 million.

[5] Our results are robust to the use of alternative proxies used in, e.g., Desai and Dharmapala (2006).

that takes the value 1 if the firm avails of tax-related services from its external auditor and 0 otherwise. Similar to the arguments for *Book_Tax_Diff*, we expect firms receiving tax advice to be more aggressive with regards to indirect taxes.

We next turn to factors related to ownership characteristics and entrenchment. In emerging market economies such as India there is a dominance of family firms that have higher ownership concentration, and also firms affiliated to business groups. Prior literature shows that such firms are likely to cultivate political connections and engage in lobbying for favors at national and local levels. Therefore, such firms are likely to be more entrenched in the system and better positioned to take advantage of loopholes and tax avoidance strategies. To capture the above effects, we use *Prom_Hold*, the percentage of shares owned by controlling shareholders or "promoters"[6], and *BG*, an indicator variable capturing membership in a business group. We expect both the above variables to exhibit a positive association with *TAX_AGGRESSIVE*.

Our empirical proxy for financial health of the firms is based on Altman's Z-Score, a well-known measure capturing financial soundness. We construct a modified version of the above measure developed by Altman (2005) that is calibrated for emerging markets economies. We expect *Z-Score* to have a negative association with the propensity for indirect tax avoidance, consistent with financial healthy firms less likely to face pressure to avoid taxes.

We also include a variety of control variables that could have an influence on the firm's propensity to avoid indirect taxes. For example, firms are required to place a security deposit under an escrow account with the government while their tax appeal is pending. The requirement

[6]As defined by the Securities Exchange Board of India (SEBI), a "promoter" means 'the person or persons who are in control of the company, directly or indirectly, whether as shareholder, director or otherwise; or person or persons named as promoters in any document of offer of securities to the public or existing shareholders or in the shareholding pattern, disclosed by the company under the provisions of the Listing Agreement' (https://www.sebi.gov.in/acts/act15a.html).

to set aside funds in the escrow account can affect the firm's propensity to engage in indirect tax evasion. We explicitly control for such deposits with the government with our *ESCROW* variable, defined as the amount of statutory deposits placed with the taxing authorities deflated by total assets. We also control for the amount of (direct) corporate taxes paid (*Corp_Tax*) since such amounts could be associated with both direct and indirect tax planning. Our empirical proxy for the strength of corporate governance, *Corp_Gov*, is a score variable capturing the quality of corporate governance of the firm, constructed using firm disclosures similar to Hawas and Tse (2016). Other control variables include tangible asset intensity of the firm (*Tangibility*), research and development expenditures (*R&D*), financial leverage (*Lev*), price-to-book ratio to capture growth opportunities (*PB*), firm profitability (*ROE*), and firm size (*MCAP*). Finally, we also include *BIG4*, a dummy variable for auditors affiliated with the largest four audit firms, as a proxy for the quality of auditor oversight.

3.2 Sample selection and descriptive statistics

Financial data and firm level daily security price data are obtained from *PROWESS* database maintained by the Center for Monitoring Indian Economy (*CMIE*), which provides comprehensive firm level financial information mainly drawn from annual reports of the firms. Data from *PROWESS* has been extensively used by several studies focusing on Indian firms [see, for example, Gopalan, Nanda and Seru (2007), Khanna and Palepu (2000), and Gopalan and Gormley (2013)]. We start with all public firms on the Bombay Stock Exchange (BSE). We exclude firms: (1) belonging to finance, insurance, or regulated sectors, (2) with majority ownership by the government, (3) with negative net worth, (4) whose share prices or financial variables used in the regression are not available. Our final analysis includes 16,798 observations derived from 2,451 public firms over 2006-2015.

[INSERT TABLE 1 HERE]

Table 1 reports descriptive statistics for the dependent and independent variables used in our test. Untabulated results show that 5,861 firm-year observations in our sample (approximately 35% of the total sample of 16,798 firm-year observations) have non-zero disputed sales tax contingent liabilities, with mean (median) liabilities amounting to approximately INR 1.90 million (INR 54.10 million). As the above statistics suggest, a majority of the firms do not report disputed sales tax liabilities, indicating that the propensity to avoid indirect taxes is concentrated in a relatively small proportion of the population. *TAX_AGGRESSIVE*, the three-year average of the amount of disputed sales tax liabilities deflated by total revenues, has a mean (median) value of 0.0038 (0.00). While the above indicates that the amount of sales tax avoidance is small in relation to total sales, it is nonetheless significant compared with the amount of sales taxes paid.[7] *Prod_Diversity* has a mean value of 0.5927, indicating that approximately 59% of our sample firms offer a large variety of products and services. *Proximity_HQ* has a mean (median) value of 0.4778 (0.4444), implying that the average firm in the sample has less than half its manufacturing facilities located in the same state as its headquarters. *Int_Ops*, which captures the proportion of income derived from international operations, has a mean (median) value of 0.1846 (0.0507).

Among variables capturing potential synergies with direct tax avoidance, *Book_Tax_Diff*, the difference between reporting (book) and tax income, has a mean value of 0.01 implying that the average sample firm has relatively lower tax income, indicating the extent of direct tax aggressiveness. *Tax_Advice*, the indicator variable for firms seeking tax-related advice from their

[7] Untabulated results indicate that the average sales for our sample firms are INR 548.60 million, and the amount of sales tax paid has a mean value of INR 0.90 million. Therefore, disputed sales tax liabilities are more than double the amount of sales taxes paid, on average.

auditors, has a mean value of 0.166, suggesting nearly 17% of sample firms employ outside expertise in tax planning. Approximately 42% of sample observations are derived from firms affiliated with business groups, confirming the findings in prior studies such as Khanna and Palepu (2000) and Fisman (2001) that emerging market economies such as India are dominated by the presence of business groups. Our sample firms also exhibit relatively high levels of promoter ownership as evidenced by mean (median) promoter shareholding of 0.42 (0.65). The average (median) *Z-Score* for our sample firms is 5.50 (5.54) indicating that the average firm is in good financial health, and does not face significant financial constraints.

Among control variables, the corporate governance proxy, *Corp_Gov*, has a mean (median) value of 0.75 (0.77) implying a fairly high level of compliance with corporate governance norms. Firms are required to set aside funds in an escrow account pending their tax appeal. As revealed by the mean value of *ESCROW*, such funds are of comparable magnitude to the amount of sales taxes under dispute. Finally, the average sample firm is large with market capitalization of approximately INR 203 million (equivalent to approximately USD 3 million), with reasonable growth prospects (mean price-to-book ratio of 2.02) and healthy profits (mean ROE of 0.11).

[INSERT TABLE 2 HERE]

Table 2 presents Pearson correlations among our dependent and independent variables. For brevity, we focus on the correlations of our tax aggressiveness measures with the key independent variables. *TAX_AGGRESSIVE*, our measure of sales tax avoidance, exhibits several univariate correlations that are in the expected direction and statistically significant at the 5% level. For example, consistent with our expectations, *TAX_AGGRESSIVE* is positively correlated with both *Prod_Diversity* (corr. coeff.=0.0169) and *Proximity_HQ* (corr. coeff.=0.0203), but

negatively correlated with *Int_Ops* (corr. coeff.=-0.0368). The degree of indirect tax aggressiveness is also positively (negatively) correlated with business group affiliation (*Z-Score*) with a correlation coefficient of 0.0213 (-0.0646).

3.3 Empirical results

We now discuss the results of multivariate regressions using *TAX_AGGRESSIVE* as the dependent variable. In Table 3, we present results of our regression analyses containing Model (1) with operational structure variables, Model (2) with direct tax avoidance complementarity measures, and Model (3) with proxies for ownership concentration and systemic entrenchment. Finally, Model (4) contains all of the hypothesized variables along with controls.

[INSERT TABLE 3 HERE]

As reported in Model (1), and consistent with our expectations, *Prod_Diversity* and *Proximity_HQ* have significantly positive coefficients, implying that firms wither greater product diversity and more concentrated operations have a greater propensity to avoid sales taxes. On the other hand, *Int_Ops*, the extent of international sales, has a negative coefficient, suggesting firms with significant overseas operations find it relatively harder to avoid sales taxes. In Model (2), we find that, consistent with our expectations, both *Book_Tax_Diff* and *Tax_Advice* have positive coefficients, although only the coefficient on *Book_Tax_Diff* is statistically significant at the conventional levels. This is indicative of complementarities between direct and indirect tax avoidance. As reported in Model (3), both our measures, *Prom_Hold* and *BG*, have significantly positive coefficients, suggesting ownership concentration and business group affiliation are positively associated with indirect tax aggressiveness. Finally, Model (4) includes all the hypothesized variables, in addition to our measure of the firm's financial health, *Z-Score*, along with controls. We note that all the variables of interest retain their coefficient sign and

significance levels. In particular, *Book_Tax_Diff* and *Tax_Advice* both have significantly positive coefficients. In addition, *Z-Score* has a significantly negative coefficient, implying that financially healthy firms are less likely to engage in indirect tax aggressiveness.

4. Empirical Analysis: Tax Reform and Consequences of Indirect Tax Aggressiveness

As discussed above, we treat the passage of the GST Bill as an exogenous shock to the Indian economy and use the average change in equity value as an empirical proxy for the net firm-level impact of the new legislation. In particular, we conjecture that firms that have previously engaged in indirect tax aggressiveness would be negatively impacted by the change in the indirect tax regime. In addition, firms operating in better-governed tax jurisdictions that have a higher probability of timely implementation of the new rules are likely to feel the brunt of the reform. On the other hand, sufficiently endowed firms are less likely to find themselves constrained due to the possibility of back tax payments. Below we describe our empirical research design and sample selection, and then discuss the results of our analysis.

4.1 Research design

To analyze the firm-level stock price reaction to the passage of the GST Bill, we estimate the following regressions at the firm level, which is consistent with prior studies such as Armstrong, Barth, Jagolinzer and Larcker (2010) and Sikes, Tian and Wilson (2014):

$$CAR_{i,t} = \alpha_0 + \alpha_1 TAX\_AGGRESSIVE_{i,t-1} + \alpha_2 Cash_{i,t-1} + \alpha_3 STATE\_GOV_{i,t-1} + Controls + \varepsilon_t \quad (2)$$

The dependent variable is the five-day firm level cumulative abnormal return (*CAR*) surrounding the passage of the GST Bill. As discussed above, *TAX_AGGRESSIVE*, the average disputed sales tax contingent liability deflated by revenues, is our measure of firm-level indirect

tax avoidance. If the tax reforms impose a net cost on firms invested in indirect tax avoidance strategies, then *TAX_AGGRESSIVE* should have a negative coefficient.

We capture the availability of liquid resources at the firm's disposal in the form of cash and cash equivalent by using *Cash* variable. We expect that such resources will allow the firm to adapt to the new tax regime and settle past dues. Hence *Cash* should have positive relationship with our dependent variable. Our next variable of interest is *STATE_GOV*, a dummy variable capturing the quality of governance in the state where the firm is registered. The World Bank publishes Ease of Doing Business rankings for Indian states. We code *STATE_GOV* as 1 for firms registered in states that belong in the top quartile of the World Bank rankings distribution, and 0 otherwise. The regression includes a variety of control variables, such as, profitability (*ROE*), firm size (*MCAP*), and prior year market return (*Pre_Ret*). We also include the number of product segments (*Segment*) and escrow deposits (*Escrow*). We use industry clustering for standard errors in our regression (we get similar results with the inclusion of industry dummies).

4.2 Sample Selection and Measurement of Firm-Level Abnormal Returns

We start with all publicly listed firms on the Bombay Stock Exchange (BSE) and, as discussed in Section 3, eliminate firms: (1) belonging to finance, insurance, or regulated sectors, (2) with majority ownership by the government, (3) with negative net worth, (4) whose share prices or financial variables used in the regression model are not available. Our final sample includes 2,685 observations. We estimate a market model of firm-level returns by regressing firm returns on value-weighted market returns over a 360-trading day period extending from day -365 to day -5 prior to the passage of the GST Bill. Daily firm level abnormal returns are cumulated over five days around the event day, beginning with day -3 and ending with day +1 to yield our firm level cumulative abnormal return measure, *CAR*.

4.3 Sample Descriptive Statistics

Table 4 reports descriptive statistics for key variables used in our cross-sectional analysis of firm-level stock price reaction to the passage of the GST Bill. The average five-day abnormal return at the firm level, *CAR*, is negative. The mean (median) *CAR* is -0.012 (-0.013), which is statistically different from zero at the 1% level. The average firm in the sample has mean (median) *ROE* of -0.012 (0.036). The mean (median) prior year return is 9.88% (2.8%) and Cash ratio is 2.54 (0.76). The average firm in the sample is also relatively large with a mean asset base (market capitalization) of INR 1,545.65 million (INR 449.97 million).[8]

[INSERT TABLE 4 HERE]

Table 5 reports Pearson univariate correlation between variables. Since we do not develop hypotheses on correlations among specific variables, except for the relation between the market reaction and disputed taxes, we omit a detailed discussion of correlations for brevity. We note that *CAR*, the firm-level stock price reaction to the passage of the GST Bill, is significantly negatively correlated with the level of disputed sales tax contingent liabilities, and positively and significantly related with *Cash*. This is consistent with our expectations.

[INSERT TABLE 5 HERE]

4.4 Results of Multivariate Regression

We report estimation results from our multivariate regressions in Table 6.

[INSERT TABLE 6 HERE]

As reported in the table, the coefficient on disputed sales tax contingent liability, *TAX_AGGRESSIVE*, is negative and highly statistically significant (coefficient estimate=-0.0196, p-value=0.001), implying that firms with higher levels of indirect tax aggressiveness

[8] In regression analysis we use the natural log of firm size. Also, all continuous variables are winsorized at the extreme 1% tails.

have significantly lower abnormal return at the time of the passage of the GST Bill. Our measure of firm level liquidity (*Cash*) has a positive and significant coefficient (coefficient estimate=0.0002, p-value=0.008), suggesting that firms with liquid resources experience higher abnormal return at the time of passage of GST bill. Our other variable of interest, i.e., state governance variable, *STATE_GOV*, also has a significantly positive coefficient (coefficient estimate=0.0090, p-value=0.012), suggesting that the GST Bill is perceived by investors as bringing net benefits to firms registered in well-governed states. Overall, the above results are consistent with our expectations and underscore shareholder value consequences of engaging in indirect tax aggressiveness when such opportunities are taken away.

4.5 Endogeneity Concerns: Two-Stage Heckman-Style Analysis

There could be concerns that our results are driven by potential endogeneity between factors affecting indirect tax aggressiveness and the stock price reaction experienced by firms at the passage of the GST Bill. To address such concerns, we implement a two-stage analysis (see, e.g., Heckman, 1979; and Maddala, 1983). Specifically, we first estimate a first-stage probit model of the determinants of indirect tax aggressiveness where the dependent variable, *TAX_AGGRESSIVE_dummy*, is a binary variable coded as 1 if the firm reports a sales tax contingent liability, and 0 otherwise. This probit regression includes independent variables discussed in Section 3. We then generate the inverse Mill ratio (IMR) from this model, *lambda*, that is included in the second-stage OLS regression of event period *CAR*s on the disputed sales tax dummy and other variables of interest. The results of this analysis are reported in Table 7.

[INSERT TABLE 7 HERE]

As reported in Panel A of Table 7, a majority of the hypothesized factors affecting indirect tax aggressiveness have the expected coefficient signs, albeit with diminished statistical

significance due to a large reduction in sample size (as well as a potential loss in information due to our use of a binary variable rather than a continuous variable). This gives us confidence that our empirical model of indirect tax aggressiveness is robust to alternative variable measurement. As discussed above, the IMR from the first stage model, *Lambda*, is then included in the return regression in Panel B of Table 7. As reported in the Table, our indirect tax aggressiveness variable, *TAX_AGGRESSIVE_Dummy*, retains its significantly negative coefficient across all regression models. Therefore, it does not appear that potential endogeneity is driving our results.

4.6 Endogeneity Concerns: Regression Discontinuity Design

The two-stage Heckman selection model discussed above addresses potential sample selection bias and corroborates our main findings. However, there could still be other econometric concerns such as correlated omitted variable bias and causality. To help alleviate such concerns, we further test our main model by employing regression discontinuity (RD) research design (e.g., Lee and Lemieux, 2010). An RD test essentially compares the outcomes just above and just below an intervention threshold which separates the treatment sample from the control sample. Since the intervention being studied typically arises out of an exogenous shock (passage of the GST Bill, in our case), firms do not have any influence over the outcome (in our setting, the stock market reaction to the passage of the GST Bill). If the treatment and control samples have similar characteristics prior to the intervention, then any observed difference in outcomes would be attributable to the intervention that creates the discontinuity in outcomes between treatment and control samples. In sum, as discussed in Lee and Lemieux (2010) and Atanasov and Black (2016), an RD test design is a close approximation of a randomized experiment.

Our study focuses on firms that were tax aggressive prior to the passage of the GST Bill, and that experience a negative stock price reaction at the time of the regulatory intervention. We expect the negative stock price reaction to be more severe for firms that were relatively more tax aggressive in the pre-GST regime. We define firms as being more (less) aggressive if their average disputed sales tax contingent liability deflated by revenues is above (below) the sample median value. In other words, median disputed sales tax contingent liability provides the threshold that separates treatment (tax aggressive) observations from control (non-tax aggressive) observations in our setting.

[INSERT FIGURE 1 HERE]

We begin by presenting graphical evidence on stock price reaction around the passage of the GST Bill. In Figure 1, Panel A, we observe a discontinuity in abnormal stock price reaction around the threshold of median disputed sales tax contingent liability deflated by revenues. Firms to the right of the threshold, that are more tax aggressive, experience significantly lower abnormal return compared to firms on the left of the threshold, that are less tax aggressive. We also conduct a placebo test using three randomly generated event dates and plot abnormal returns around the threshold on these dates. In Panels B, D and D of Figure 1 we do not observe a similar discontinuity in that the market reaction for tax aggressive (treatment) firms is statistically indistinguishable from the market reaction for non-tax aggressive (control) firms. This provides preliminary assurance that in our setting it is the intervention (passage of the GST Bill), and not the partitioning of the sample into two groups imposed by us, that causes a discontinuity in the observed abnormal returns.

We next turn to formal RD regression analysis by focusing on the sub-sample of firms that have non-zero disputed sales tax contingent liabilities. As reported in Table 8, Panel A, of

the 2,685 firms in our initial sample, 710 firms (26.4% of the sample) have non-zero disputed tax liabilities. The sub-sample comprises firms that are larger on average than firms in the population. For example, the mean total assets for firms with disputed tax liabilities are INR 29,713.1 million compared with mean total assets of INR 17,035.1 million for the entire population. For the sub-sample under study, the median value of average disputed sales tax contingent liabilities deflated by revenues has a mean (median) value of 0.0318 (0.0042), indicating the presence of some firms with a large amount of disputed taxes in the sample. Given the skewness in the distribution of disputed sales tax contingent liabilities, we use the median value as the threshold.

Similar to prior studies using an RD test design, such as Cuesta and Imai (2016) and Bradley, Kim and Tian (2017), our RD test examines the difference in the mean outcomes for the treatment sample and the control sample, respectively. We start by examining whether our partitioning of the sample into tax aggressive firms (treatment sample) and non-tax aggressive firms (control sample) satisfies the necessary conditions for conducting RD analysis. As reported in Table 8, Panel B, firms in the two group of observations on either side of the threshold appear to be similar on all the other characteristics, with the exception that they are more or less aggressive based on median disputed tax threshold. This supports our argument that any observed difference in abnormal return around the threshold would be due to the intervention, i.e., passage of the GST Bill, and not due to some other factors. In implementing the RD regression, we utilize triangular kernel along with optimal bandwidths as described in prior studies such as Imbens and Kalyanaraman (2012). We use the same set of controls as used in the main regression Equation (2). We report RD regression results in Panel C of Table 8. Given our sample restrictions, our analysis is carried out on a significantly smaller sample containing only

169 observations. Nonetheless, results from the RD regression continue to support our main analysis. Specifically, we document negative and significant market reaction for tax aggressive firms (coefficient magnitude for *TAX_AGGRESSIVE* = -0.0461, p-value=0.0006) at the passage of the GST Bill. To summarize, results of our regression discontinuity test support inference from our main analysis, and when combined with the Heckman-style two stage analysis discussed above, these results provide assurance that our inferences are not driven by econometric issues such as selection bias, correlated omitted variables, or endogeneity concerns.

4.7 Additional Analyses and Robustness Tests

We next implement several additional analyses (untabulated) to gain further insights into shareholder wealth effects of the tax reform. We first split our sample based on business group affiliation. Approximately 36% of all firms are group affiliated, while the remaining 64% are standalone (unaffiliated) firms. We estimate our regression models from Table 5 separately in the two sample partitions and find that while the coefficient on disputed sales tax liability is negative for business group firms as well as for standalone firms, the results are stronger for standalone firms. Results for *Cash* and *STATE_GOV* suggest that the adjustment costs to conform to the new tax regime are likely to be higher for standalone firms. In contrast, business group firms appear to have smaller costs, possibly due to the presence of internal capital markets and support from other affiliated firms.

We also split our sample based on the political climate in the state where the firms are registered. We identify whether the State government is ruled by the same political party as the party in power at the Center (Bharatiya Janata Party, or the BJP). Our objective is to see whether the there is any systematic difference in the stock price reaction for firms located in states where the GST Bill is likely to be implemented more effectively due to having the same party in power

at both central and state levels. This analysis suggests that our market reaction results are mainly driven by firm registered in states where the likely effectiveness of indirect tax reforms is higher.

We carry out several robustness analyses to ensure that our results are not driven by our test specification and variable measurement choices. First, we replace our indirect tax measures by dummy variables indicating the presence of disputed sales taxes and overall indirect taxes, and find that our results remain qualitatively similar. Our results are also robust to alternative event window definitions, e.g., two trading days before through two trading days after the event date. We also use other control variables, such as return on assets (ROA) as an alternative profitability measure, and find the results are essentially unchanged. With respect to cumulative abnormal return (*CAR*), we use the BSE SENSEX index return instead of the value-weighted return in our market model and find qualitatively similar results.

We also carry out a placebo test to support our hypotheses regarding the firm level stock price reaction to the passage of the GST Bill. It could be argued that the variation in firm-level stock price reaction we document is not necessarily caused by investors' expectations of the effects of the GST Bill, but rather that, for example, firms engaging in aggressive tax behavior (liquid firms) may in general experience negative (positive) abnormal returns. If this alternative argument is true, then we should not observe a systematic association between the firm level abnormal stock returns and our hypothesized causal factors on other (non-event) dates. Consistent with the above argument, we carry out a placebo test by generating three random event dates and calculate value weighted *CAR* treating the above random dates as if they were true event dates. We then estimate our Equation 4 regression in all the three cases. We do not find our variables of interest to be statistically significant in any of these regressions. The

absence of our hypothesized effects on the above randomly chosen non-event dates supports our claim that the evidence provided by us is specific to the passage of the GST bill.

5. Conclusion

We examine the incentives for firms to engage in indirect tax evasion, and the consequences of such conduct. Prior studies have focused on factors influencing direct tax avoidance (e.g., income tax) and found that avoiding or evading direct taxes can lead to a range of potentially negative consequences, including monetary penalties and loss of reputation. However, direct taxes are only a part of a firm's total tax exposure, with indirect taxes such as sales tax, customs and excise being a significant responsibility at the firm level. Even though indirect taxes do not directly affect the firm's bottom line, they can affect the end demand and, therefore, the firm's revenues due to their effect on the price of final as well as intermediate goods. There is evidence in the prior literature that just as in the case of direct taxes, firms engage in extensive indirect tax evasion.

We examine how a firm's operational and organizational characteristics, propensity to avoid income taxes, ownership concentration, systemic entrenchment, and financial constraints affect the firm's degree of indirect tax aggressiveness. Further, we also use an exogenous shock to the economy, i.e., the Good and Services Tax (GST) Bill that represents an overhaul of the prevailing indirect tax regime in India, to study the consequences of engaging in indirect tax aggressiveness. Prior studies, largely in the context of direct taxes, have found that both individuals and firms undertake significant risks of aggressive tax planning. Such risks include potential monetary penalties and imprisonment in extreme cases, but also reputation loss and diminished labor market prospects. However, there is a paucity of appropriate settings where a

causal relation can be established between tax aggressiveness and its theorized consequences. Therefore, our focus on the incentives to avoid indirect taxes and the consequences of such behavior adds new evidence to the literature.

Using a sample of Indian public firms, we find that firms with greater product diversity and geographically concentrated operations (international operations) are more (less) aggressive in their efforts to avoid sales taxes. We also find evidence of a complementary relationship between direct and indirect tax avoidance in that firms more likely to avoid income taxes are also more likely to avoid sales taxes. Concentrated ownership and systemic entrenchment, as evidenced by the firm's membership in a business group, are positively associated with the propensity to avoid sales taxes. Finally, financially constrained firms are also more aggressive in regards to indirect taxes. Turning to the consequences of indirect tax avoidance, we find that firms with higher disputed sales tax liabilities suffer a negative stock price reaction on the announcement of indirect tax reforms. This is consistent with tax aggressive firms experiencing shareholder wealth loss not only because of a greater likelihood of having to pay back taxes but also because the tax reform likely eliminated future tax evasion opportunities. We also find that such negative stock price reaction is concentrated in jurisdictions where the probability of timely and efficient enforcement of the new indirect tax rules is higher, and that firms that are better-connected or have sufficient cash reserves on hand appear to be well-positioned to manage the transition to the new indirect tax regime.

Our study is the among the few empirical studies to focus on indirect taxes, and the first to our knowledge to exploit an exogenous shock in the form of economy-wide tax reforms to study the consequences of indirect tax avoidance. Indirect taxes are an important component of the firm's total tax burden, however the incentives to avoid indirect taxes and the consequences

of such behavior are not well-understood due to relative scarcity of prior studies in this area. Our paper seeks to fill this gap in the literature. Our results are likely to be of interest to not only tax scholars, but also investors, tax regulators and practitioners.

References

Abrams, C., Nayak, D., and Kala, A.V., 2017. An early sign India's huge tax revamp is working: Happy truck drivers, *The Wall Street Journal*, July 19, 2017.

Alm, J., Blackwell, C., and McKee, M, 2004. Audit selection and firm compliance with a broad-based sales tax, *National Tax Journal* 57(2), 209-227.

Alm, J., Martinez-Vazquez, J., and Chandler, M., 2016. Corruption and firm tax evasion, *Journal of Economic Behavior & Organization* 124, 146-163.

Almazan, A., De Motta, A., Titman, S., and Uysal, V., 2010. Financial structure, liquidity and firm locations, *Journal of Finance* 65, 529-563.

Altman, E., 2005. An emerging market scoring system for corporate bonds, *Emerging Markets Review* 6, 311-323.

Anand, G., 2017. After killing currency, Modi takes a leap with India's biggest-ever tax overhaul, *The New York Times*, June 30, 2017.

Anderson, E.T., Fong, N.M., Simester, D.I., and Tucker, C.M., 2010. How sales taxes affect customer and firm behavior: The role of search on the internet, *Journal of Marketing Research* 47, 229-239.

Armstrong, C., Barth, M.E., Jagolinzer, A.D. and Riedl, E.J., 2010. Market reaction to the adoption of IFRS in Europe, *The Accounting Review* 85(1), 31-61.

Asthana, S., 2014. All you want to know about Amazon India's tax issue, *Business Standard*, September 17, 2014.

Atanasov, V., and Black, B., 2016. Shock-based causal inference in corporate finance and accounting research, *Critical Finance Review* 5, 207–304.

Ballard, C.L., and Lee, J., 2007. Internet purchases, cross-border shopping, and sales taxes, *National Tax Journal* 60, 711–725.

Baugh, B., Ben-David, I., and Park, H., 2018. Can taxes shape an industry? Evidence from the implementation of the "Amazon Tax", Forthcoming in *Journal of Finance*, DOI: 10.1111/jofi.12687.

Besfamille, M., De Donder, P., and Lozachmeur, J.M., 2013. The political economy of the (weak) enforcement of indirect taxes, *Journal of Public Economic Theory* 15 (6), 856–883.

Bradley, D., Kim, I., and Tian, X., 2017. Do unions affect innovation? *Management Science* 63(7), 2251–2271.

Chen, S., Chen, X., Cheng, Q., and Shevlin, T., 2010. Are family firms more tax-aggressive than non-family firms? *Journal of Financial Economics* 95, 41-61.

Coffee Jr, J.C., 2002. Racing towards the top? The impact of cross-listings and stock market competition on corporate governance. *Columbia Law Review* 102, 1757–1831.

Coval, J., and Moskowitz, T., 1999. Home bias at home: local equity preference in domestic portfolios, *Journal of Finance* 54, 2045-2073.
Cremer, H., and Gahvari, F., 1999. Excise tax evasion, tax revenue, and welfare, *Public Finance Review* 27(1), 77-95.

Crocker, K., and Slemrod, J., 2005. Corporate tax evasion with agency costs. *Journal of Public Economics* 89, 1593–1610.

Cuesta, B., and Imai, K., 2016. Misunderstandings about the regression discontinuity design in the study of close elections, *Annual Review of Political Science* 19, 375–396.

Desai, M., and Dharmapala, D., 2006. Corporate tax avoidance and high- powered incentives. *Journal of Financial Economics* 79, 145–179.

Doidge, C., Karolyi, A.G., Stulz, R.M., 2004. Why are foreign firms listed in the US worth more? *Journal of Financial Economics* 71, 205–238.

Dyreng, S., Hanlon, M., and Maydew, E., 2008. Long-run corporate tax avoidance, *The Accounting Review* 83, 61–82.

Edwards, A., Schwab, C., and Shevlin, T., 2016. Financial constraints and cash tax savings, *The Accounting Review* 91(3), 859-881.

European Commission, 2004. *Report from the Commission to the Council and the European Parliament on the use of administrative cooperation arrangements in the fight against VAT fraud, COM (2004) 260 final*, Brussels.

Fisman, R., 2001. Estimating the value of political connections, *American Economic Review* 91(4), 1095-1102.

Frank, M.M., Lynch, L.J., and Rego, S.O., 2009. Tax reporting aggressiveness and its relation to aggressive financial reporting. *The Accounting Review* 84(2), 467-496.

Fresard, L., and Salva, C., 2010. The value of excess cash and corporate governance: Evidence from US cross-listings. *Journal of Financial Economics* 98, 359-384.

Goolsbee, A., 2000. In a world without borders: The impact of taxes on internet commerce, *Quarterly Journal of Economics* 115(2), 561–576.

Gopalan, R., and Gormley, T. A., 2013. Do public equity markets matter in emerging

economies? Evidence from India, *Review of Finance 17*(5), 1571–1615.

Gopalan, R., Nanda, V., and Seru, A., 2007. Affiliated firms and financial support: Evidence from Indian business groups, *Journal of Financial Economics 86*(3), 759–795.

Gordon, J.P.F., 1990. Evading taxes by selling for cash, *Oxford Economic Papers, New Series* 42(1), 244-255.

Graham, J.R., Raedy, J.S., and Shackelford, D.A., 2012. Research in accounting for income taxes, *Journal of Accounting and Economics* 53, 412-434.

Graham, J. R., and Tucker, A. L., 2006. Tax shelters and corporate debt policy, *Journal of Financial Economics 81*(3), 563-594.

Hanlon, M and Heitzman, S, 2010, 'A review of tax research', *Journal of Accounting and Economics*, 50 (2): 127-178.

Hanlon, M., and Slemrod, J., 2009. What does tax aggressiveness signal? Evidence from stock price reactions to tax shelter involvement, *Journal of Public Economics* 93, 126-141.

Hawas, A., and Tse, C.B., 2016. How corporate governance affects investment decisions of major shareholders in UK listed companies: Has the recent credit crunch changed the game? *Journal and Accounting, Auditing and Finance* 31(1), 100-133.

Heckman, J., 1979. Sample selection bias as a specification error, *Econometrica*, 47, 153-161.

Hill, C.W.L., and Hoskisson, R.E., 1987. Strategy and structure in the multiproduct firm. *Academy of Management Review* 12(2), 331-341.

Hoopes, J.L., Thornock, J.R. and Williams, B., 2016. Does use tax evasion provide a competitive advantage to e-tailers? *National Tax Journal* 69, 133–168.

Imbens, G., and Kalyanaraman, K., 2012. Optimal bandwidth choice for the regression discontinuity estimator, *Review of Economic Studies* 79(3), 933–959.

Joshi, D., and Ray, R.K., 2016. GST Bill not coming up in Rajya Sabha on July 25-26, Btvi.in, published online July 25, 2016, downloaded on October 18, 2016.

Keen, M., and Smith, S., 2007. VAT fraud and evasion: What do we know and what can be done? *National Tax Journal* 59(4), 861-887.

Khanna, T., and Palepu, K., 2000. Is group affiliation profitable in emerging markets? An analysis of diversified Indian business groups, *The Journal of Finance 55*(2), 867–891.

Khanna, T., and Rivkin, J.W., 2001. Estimating the performance effects of business groups in emerging markets, *Strategic Management Journal* 22, 45-74.

Kiran, N., 2015. The tax tangle. Business Today, December 25, 2015.

Lanis, R., and Richardson, G., 2011. The effect of board of director composition on corporate tax aggressiveness, *Journal of Accounting and Public Policy* 30, 50-70.

Lee, D. S., and T. Lemieux, 2010. Regression discontinuity designs in economics, *Journal of Economic Literature* 48, 281–355.

Lerner, J., 1995. Venture capitalists and the oversight of private firms, *Journal of Finance* 50, 301-318.

Maddala, G. S., 1983. *Limited dependent and qualitative variables in econometrics*. New York, NY: Cambridge University Press.

Manuszak, M.D., and Moul, C.C., 2009. How far for a buck? Tax differences and the location of retail gasoline activity in Southeast Chicagoland, *Review of Economics and Statistics* 91(4), 744-765.

Manzon, G., and Plesko, G., 2002. The relation between financial and tax reporting measures of income, *Tax Law Review* 55, 175–214.

Marrelli, M., 1984. On indirect tax evasion, *Journal of Public Economics* 25, 181-196.

Massa, M., and Rehman, Z., 2008. Information flows within financial conglomerates: Evidence from the banks-mutual funds relation, *Journal of Financial Economics* 89, 288-306.

Murrary, M.N., 1995. Sales tax compliance and audit selection, *National Tax Journal* 48(4), 515-530.

Morck, R., Shleifer, A., and Vishny, R.W., 1988. Management ownership and market valuation: An empirical analysis, *Journal of Financial Economics* 20, 293-315.

Nair, R.P., and Balasubramanyam, K.R., 2014. Relief for Amazon: Karnataka in damage control mode, asks its taxmen to go easy on dealers, *The Economic Times*, September 17, 2014.

Nam, C.W., Parsche, R., and Schaden, B., 2001. Measurement of the value added tax evasion in selected EU countries on the basis of national accounts data, *IFO Studien* 2, 127–144.

Padmanabhan, A., 2016. NDA's do-or-die moment on GST, LiveMint.com, Published online on Monday, August 1, 2016. Downloaded on October 18, 2016.

Poterba, J.M., 1996. Retail price reactions to changes in state and local sales taxes, *National Tax Journal* 49, 165–176.

Richardson, G., Taylor, G., and Lanis, R., 2013. The impact of board of director oversight

characteristics on corporate tax aggressiveness: An empirical analysis, *Journal of Accounting and Public Policy* 32, 68-88.

Sandmo, A., 2005. The theory of tax evasion: A retrospective view, *National Tax Journal* 58(4), 643-663.

Sikes, S., Tian, X.S., and Wilson, R., 2014. Investors' reaction to poison pills as a tax loss preservation tool, *Journal of Accounting and Economics* 57: 132-148.

Slovin, M.B., and Sushka, M.E., 1993. Ownership concentration, corporate control activity, and firm value: Evidence from the death of inside blockholders, *Journal of Finance* 48(4), 1293-1321.

Stehr, M., 2007. The effect of Sunday sales bans and excise taxes on drinking and cross-border shopping for alcoholic beverages, *National Tax Journal* 60(1), 85-105.

Stulz, R.M., 1988. Managerial control of voting rights: Financing policies and the market for corporate control, *Journal of Financial Economics* 20, 25-54.

Swenson, D.L., 2001. Tax Reforms and Evidence of Transfer Pricing. *National Tax Journal* 54(1), 7-25.

The Hindu, 2010. Two tax evasion cases by Cadbury India detected: Govt, Published online on November 22, 2010, downloaded May 21, 2018.

The Hindu, 2013. Bhushan Steel faces Rs 24-Crore excise duty evasion charge, Published online on May 20, 2013, downloaded May 21, 2018.

The Times of India, 2010. State sales tax department busts major evasion racket, Published online on December 21, 2010, downloaded September 28, 2017.

The Times of India, 2013. Sales tax department unearths Rs 1,600-crore tax evasion, Published online on March 27, 2013, downloaded September 28, 2017.

Virmani, A., 1989. Indirect tax evasion and production efficiency, *Journal of Public Economics* 39, 223-237.

Exhibit I

Tata Motors Limited
Excerpts from the Annual Report for the Financial Year 2016-2017

Notes Forming Part of Consolidated Financial Statements (page F-127)

37. Commitments and Contingencies

Sales Tax

The total sales tax demands (including interest and penalty), that are being contested by the Company amount to R1,057.93 crores[9], which includes R11.54 crores in respect of equity accounted investees as at March 31, 2017 (R1,251.38 crores, which includes R22.79 crores in respect of equity accounted investees, as at March 31, 2016 and R993.15 crores, which includes R22.65 crores in respect of equity accounted investees, as at April 1, 2015). The details of the demands for more than R20 crores are as follows:

The Sales Tax Authorities have raised demand of R208.59 crores (R403.38 crores as at March 31, 2016 and R120.12 crores as at April 1, 2015) towards rejection of certain statutory forms for concessional lower/nil tax rate (Form F and Form C) on technical grounds such as late submission, single form issued against different months/quarters dispatches/sales, etc. and denial of exemption from tax in absence of proof of export for certain years. The Company has contended that the benefit cannot be denied on technicalities, which are being complied with. The matter is pending at various levels.

In some of the states in India, the Sales Tax Authorities have raised disputes totaling up to R40.80 crores as at March 31, 2017 (R41.10 crores as at March 31, 2016 and R41.10 crores as at April 1, 2015), treating the stock transfers of vehicles from the Company's manufacturing plants to regional sales offices and the transfers between two regional sales offices as sales liable for levy of sales tax. The Company is contesting this issue.

The Sales Tax Authorities have denied input tax credit and levied interest and penalty thereon due to varied reasons aggregating to R305.46 crores as at March 31, 2017 (R330.17 crores as at March 31, 2016 and R366.45 crores as at April 1, 2015). The reasons for disallowing credit was mainly due to Taxes not paid by Vendors, incorrect method of calculation of set off as per the department, alleging suppression of sales as per the department etc. The matter is contested in appeal.

Sales tax demand aggregating R258.35 crores as at March 31, 2017 (R252.66 crores as at March 31, 2016 and R258.40 crores as at April 1, 2015) has been raised by Sales Tax Authorities disallowing the concessional rate of 2% on certain purchases of raw materials in case the final product is stock transferred for sale outside the state. The matter is pending with various authorities.

---

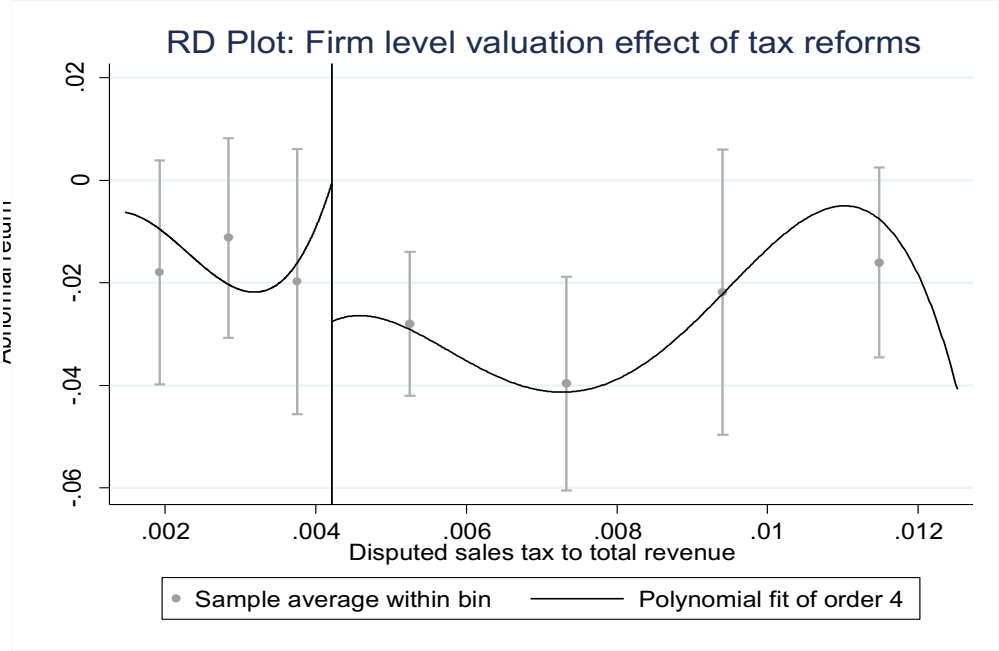
[9] 1 crore = 10 million
US Dollar 1 = Indian Rupees (INR) 68.21, per Reserve Bank of India's reference rate as of May 23, 2018.

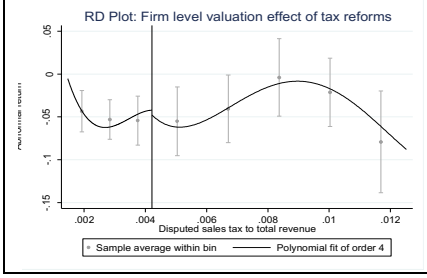
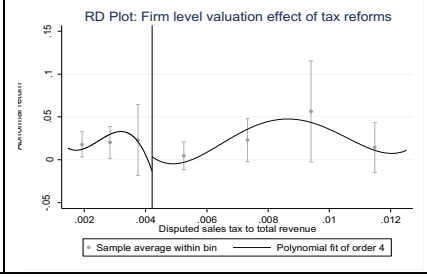
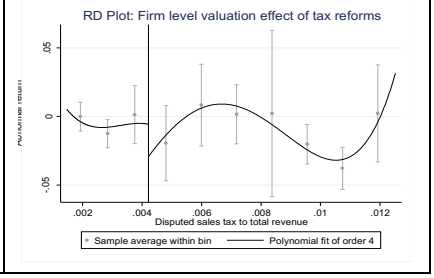
Appendix I
Variable Definitions

Variable	Definition
BG	A dummy variable coded as 1 if the firm is affiliated to a business group, 0 otherwise.
BIG4	A dummy variable coded as 1 if a firm is audited by a big-4 auditor or its affiliates, 0 otherwise.
CAR	Cumulative Abnormal Return of firms using market model with value-weighted return of firms listed on the Bombay Stock Exchange (BSE) measured over five days, i.e., three days prior to the event day to one day after the event day.
Cash	The ratio of cash and cash equivalent to current liabilities.
Corp_Gov	An index computed using disclosures made under the corporate governance code (Clause 49) issued by Securities Exchange Board of India (SEBI), and consistent with Hawas and Tse (2016).
Book_Tax_Diff	Book-tax income spread computed as per Manzon and Plesko (2002).
TAX_AGGRESSIVE	3-year average of disputed sales tax contingent liability scaled by 3-year average of total revenue.
Escrow	Statutory deposits with taxing authorities pending appeals, deflated by total assets.
STATE_GOV	A dummy that takes a value of 1 if the firm is registered in a state that has been ranked in the top quartile for ease of doing business by World Bank, 0 otherwise.
Lev	The ratio of debt to total assets.
MCAP	Natural log of market capitalization of the firm.
Int_Ops	Earnings derived from overseas operations as a proportion of total earnings.
PB	Price to book ratio.
Pre_Ret	Market adjusted return of the previous year.
Prod_Diversity	A dummy variable that takes value of 1 if the firm has more product segments than the Industry median, 0 otherwise.
Prom_Hold	Percentage of shares held by promoters (controlling shareholders).
Proximity_HQ	Proportion of plants located in the same state same as the head office location.
R&D	Research and development expenses deflated by total assets.
ROE	The ratio of earnings after tax to net worth.
TA	Natural log of total assets.
Tangibility	Tangible fixed assets as a proportion of total fixed assets.
Tax_Advice	A dummy variable that takes value of 1 if external auditor provides tax related services, 0 otherwise.
Z-Score	Altman Z-score computed using Altman (2005) model.

Figure 1 Regression Discontinuity Plots

Panel A: Abnormal returns centered median disputed sales tax contingent liability



Panel B: Pseudo Event Date 1	Panel C: Pseudo Event Date 2	Panel D: Pseudo Event Date 3
		

Notes. The above figures display the functional form and fitted regression curves of firm-level abnormal returns (*CAR*) around the average value of *TAX_AGGRESSIVE*, the 3-year average of disputed sales tax contingent liabilities scaled by 3-year average of total revenue. The x-axis is the value of *TAX_AGGRESSIVE*. The vertical line represents the cutoff/threshold of median value of *TAX_AGGRESSIVE* (0.004213). Each dot depicts a local sample mean using forty non-overlapping, evenly spaced bins with bin widths of 2.5%. The solid lines represent the fitted quadratic polynomial function to the left and right of the *TAX_AGGRESSIVE* threshold. Panels A, B, C, and D present the results for three randomly chosen pseudo-event dates, respectively.

Table 1 Descriptive Statistics for Propensity to Engage in Indirect Tax Aggressiveness

This table reports descriptive statistics of variables. *TAX_AGGRESSIVE* is computed as disputed sales tax liability scaled by total revenue. *Prod_Diversity* is a dummy variable that takes value of 1 if the firm has product segments more than Industry median, 0 otherwise. *Proximity_HQ* is Proportion of plant located in the state same as that of head office location state. *Int_Ops* is foreign earnings as a proportion of total earnings. *Book_Tax_Diff* is Book-tax difference computed as per Manzon and Plesko (2002). *Tax_Advice* is a dummy variable that takes value of 1 if external auditor provides tax related services, 0 otherwise. *Prom_Hold* is percentage of shares held by the promoters. *BG* is dummy variable coded as 1 if the firm is affiliated to business group, 0 otherwise. *Z score* is Altman Z score computed using Altman (2005) model. *Corp_Gov* is a governance index computed using corporate governance code (Clause 49) issued by Securities Exchange Board of India (SEBI). *Tangibility* is ratio of tangible fixed assets as a proportion of total fixed assets. *R & D* is Research and development expenses as a proportion to total assets. *Escrow* is a variable that controls for the statutory deposits with the government authorities. *Lev* is financial leverage, defined as the ratio of debt to total assets. *MCAP* is market capitalization of the firm. *PB* is market price-to-book ratio. *ROE* is return on equity calculated as earnings after tax divided by net worth. *BIG4* is a dummy variable coded as 1 if a firm is audited by any of the big-4 auditor or its affiliate. Detailed variable definitions are provided in Appendix I.

Variable	N	Mean	p25	Median	p75
TAX_AGGRESSIVE	16,798	0.0038	0.0000	0.0000	0.0000
Prod_Diversity	16,798	0.5927			
Proximity_HQ	16,798	0.4778	0.0000	0.4444	1.0000
Int_Ops	16,798	0.1846	0.0000	0.0507	0.2758
Book_Tax_Diff	16,798	0.0114	-0.0024	0.0005	0.0190
Tax_Advice	16,798	0.1660			
Prom_Hold	16,798	0.5235	0.4197	0.5349	0.6516
BG	16,798	0.4287			
Z-Score	16,798	5.5027	4.4365	5.5405	6.7512
Corp_Gov	16,798	0.7546	0.6667	0.7778	0.8750
Tangibility	16,798	0.3050	0.1527	0.2875	0.4364
R&D	16,798	0.0017	0.0000	0.0000	0.0004
ESCROW	16,798	0.0077	0.0000	0.0007	0.0096
Lev	16,798	0.3016	0.1489	0.2964	0.4335
PB	16798	2.0142	0.5300	1.0100	2.1000
MCAP	16,798	6.9043	5.3135	6.6979	8.2554
ROE	16,798	0.1120	0.0186	0.0957	0.2064
BIG4	16,792	0.1524			

Table 2 Correlations

This table reports correlations of variables. *TAX_AGGRESSIVE* is computed as disputed sales tax liability scaled by total revenue. *Prod_Diversity* is a dummy variable that takes value of 1 if the firm has product segments more than Industry median, 0 otherwise. *Proximity_HQ* is Proportion of plant located in the state same as that of head office location state. *Int_Ops* is foreign earnings as a proportion of total earnings. *Book_Tax_Diff* is Book-tax difference computed as per Manzon and Plesko (2002). *Tax_Advice* is a dummy variable that takes value of 1 if external auditor provides tax related services, 0 otherwise. *Prom_Hold* is percentage of shares held by the promoters. *BG* is dummy variable coded as 1 if the firm is affiliated to business group, 0 otherwise. *Z score* is Altman Z score computed using Altman (2005) model. *Corp_Gov* is a governance index computed using corporate governance code (Clause 49) issued by Securities Exchange Board of India (SEBI). *Tangibility* is ratio of tangible fixed assets as a proportion of total fixed assets. *R & D* is Research and development expenses as a proportion to total assets. *Escrow* is a variable that controls for the statutory deposits with the government authorities. *Lev* is financial leverage, defined as the ratio of debt to total assets. *MCAP* is market capitalization of the firm. *PB* is market price-to-book ratio. *ROE* is return on equity calculated as earnings after tax divided by net worth. *BIG4* is a dummy variable coded as 1 if a firm is audited by any of the big-4 auditor or its affiliate. Detailed variable definitions are provided in Appendix I. * denotes significance at the 5% level.

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]
[1]	*TAX_AGGRESSIVE*	1																
[2]	*Prod_Diversity*	0.0169*	1															
[3]	*Proximity_HQ*	0.0203*	-0.0010	1														
[4]	*Int_Ops*	-0.0368*	-0.0148	0.0883*	1													
[5]	*Book_Tax_Diff*	-0.0059	0.0019	-0.0464*	0.1008*	1												
[6]	*Tax_Advice*	0.0121	-0.0001	0.0006	0.0599*	0.0091	1											
[7]	*Prom_Hold*	0.0117	-0.0320*	-0.0054	-0.0377*	0.0391*	0.0201*	1										
[8]	*BG*	0.0213*	-0.0126	-0.0414*	-0.0557*	0.0397*	0.0671*	0.0826*	1									
[9]	*Z-Score*	-0.0646*	-0.0055	-0.0232*	0.1289*	0.3138*	0.0007	0.0552*	-0.0990*	1								
[10]	*Corp_Gov*	-0.0020	0.0144	-0.0125	-0.0289*	-0.0341*	-0.0580*	-0.1003*	-0.0557*	-0.0202*	1							
[11]	*Tangibility*	-0.0254*	0.0026	0.1447*	-0.0389*	-0.0630*	-0.0007	0.0589*	0.0477*	-0.2249*	-0.0883*	1						
[12]	*R&D*	-0.0103	-0.0031	-0.0016	0.0929*	0.1014*	0.0529*	0.0069	0.0893*	0.0654*	-0.0549*	0.0082	1					
[13]	*ESCROW*	0.0085	-0.0007	0.0586*	-0.0007	-0.0367*	0.0158*	0.0825*	0.0283*	-0.0460*	-0.0252*	0.0480*	0.0502*	1				
[14]	*Lev*	-0.0055	-0.0224*	0.0813*	-0.0018	-0.1506*	-0.002	0.0124	0.0063	-0.2724*	-0.0313*	0.2776*	-0.1140*	0.0429*	1			
[15]	*MCAP*	-0.0035	0.0015	-0.0682*	-0.0321*	0.1070*	0.0093	0.1111*	0.0847*	-0.0309*	0.0095	-0.0414*	0.1058*	-0.0101	-0.0319*	1		
[16]	*PB*	-0.0163*	-0.0027	-0.1982*	0.0343*	0.2128*	0.1409*	0.1265*	0.3877*	0.1022*	-0.1142*	-0.0763*	0.1948*	0.0074	-0.0915*	0.3646*	1	
[17]	*ROE*	-0.0289*	0.0039	-0.0421*	0.0311*	0.4207*	0.0144	0.0827*	0.0304*	0.3747*	-0.0352*	-0.0875*	0.0803*	0.0006	-0.2016*	0.1072*	0.2324*	1
[18]	*BIG4*	0.0039	0.0288*	-0.0959*	0.0230*	0.0651*	-0.0159*	0.0898*	0.2143*	0.0298*	-0.0339*	-0.0517*	0.1365*	0.0322*	-0.1763*	0.1634*	0.4000*	0.0701*

Table 3 Test of Incentives to Engage in Indirect Tax Aggressiveness

This table reports regression coefficients (*p*-values in parenthesis). *TAX_AGGRESSIVE* is computed as disputed sales tax liability scaled by total revenue. *Prod_Diversity* is a dummy variable that takes value of 1 if the firm has product segments more than Industry median, 0 otherwise. *Proximity_HQ* is Proportion of plant located in the state same as that of head office location state. *Int_Ops* is foreign earnings as a proportion of total earnings. *Book_Tax_Diff* is Book-tax difference computed as per Manzon-Plesko (2002). Tax_Advice is a dummy variable that takes value of 1 if external auditor provides tax related services, 0 otherwise. *Prom_Hold* is percentage of shares held by the promoters. *BG* is dummy variable coded as 1 if the firm is affiliated to business group, 0 otherwise. *Z score* is Altman Z score computed using Altman (2005) model. *Corp_Gov* is a governance index computed using corporate governance code (Clause 49) issued by Securities Exchange Board of India (SEBI). *Tangibility* is ratio of tangible fixed assets as a proportion of total fixed assets. *R & D* is Research and development expenses as a proportion to total assets. *Escrow* is a variable that controls for the statutory deposits with the government authorities. *Lev* is financial leverage, defined as the ratio of debt to total assets. *MCAP* is market capitalization of the firm. *PB* is market price-to-book ratio. *ROE* is return on equity calculated as earnings after tax divided by net worth. *BIG4* is a dummy variable coded as 1 if a firm is audited by any of the big-4 auditor or its affiliate. Detailed variable definitions are provided in Appendix I. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively. Standard errors are corrected based on two-way clustering by firm (Petersen, 2009).

	(1)	(2)	(3)	(4)
	TAX_AGGRESSIVE	*TAX_AGGRESSIVE*	*TAX_AGGRESSIVE*	*TAX_AGGRESSIVE*
Prod_Diversity	0.0015**			0.0015**
	(0.023)			(0.021)
Proximity_HQ	0.0033***			0.0031**
	(0.009)			(0.011)
Int_Ops	-0.0050***			-0.0044***
	(0.003)			(0.003)
Book_Tax_Diff		0.0116*		0.0201**
		(0.092)		(0.024)
Tax_Advice		0.0012		0.0013*
		(0.127)		(0.093)
Prom_Hold			0.0035*	0.0047**
			(0.054)	(0.027)
BG			0.0021**	0.0013*
			(0.010)	(0.089)
Z-Score				-0.0012**
				(0.010)
Corp_Gov	-0.0046	-0.0043	-0.0041	-0.0041
	(0.113)	(0.131)	(0.138)	(0.145)
Tangibility	-0.0054**	-0.0047*	-0.0051*	-0.0082**
	(0.049)	(0.071)	(0.055)	(0.016)
R&D	-0.0193	-0.0473	-0.0439	-0.0241
	(0.689)	(0.303)	(0.351)	(0.631)

ESCROW	0.0128	0.0098	0.0064	0.0056
	(0.515)	(0.625)	(0.748)	(0.780)
Lev	0.0024	0.0022	0.0019	0.0000
	(0.551)	(0.585)	(0.627)	(0.988)
PB	0.0000	0.0000	0.0000	-0.0001
	(0.641)	(0.357)	(0.343)	(0.490)
MCAP	-0.0003	-0.0006	-0.0007*	-0.0005
	(0.278)	(0.103)	(0.052)	(0.108)
ROE	-0.0018**	-0.0027***	-0.0019**	-0.0010
	(0.034)	(0.002)	(0.028)	(0.160)
BIG4	0.0008	0.0009	0.0005	0.0005
	(0.469)	(0.387)	(0.658)	(0.649)
Intercept	0.0039	0.0070**	0.0055*	0.0096**
	(0.188)	(0.046)	(0.085)	(0.020)
N	16,792	16,792	16,792	16,792
R-sq	0.056	0.054	0.055	0.060

Table 4 Descriptive Statistics of the Sample for Market Reaction Analysis

This table reports descriptive statistics of variables. *CAR* represents firm level cumulative abnormal return using market model with value-weighted return of firms listed on the BSE during 5 days, i.e., 3 days prior to event day to one day post event day. *ROE* is return on equity calculated as earnings after tax to net worth. *TAX_AGGRESSIVE* is computed as disputed sales tax liability scaled by total revenue. *Cash* is the ratio of cash and cash equivalent to the current liabilities. *STATE_GOV* is a dummy that takes a value of 1 if the firm is registered in a state that has been ranked in the top quartile for ease of doing business by World Bank. *Pre_Ret* is a market adjusted return of the previous year. *Escrow* is a variable that controls for the statutory deposits with the government authorities. *Segment* is a dummy variable that takes value of 1 if the firm operates in multiple product segments, and 0 otherwise

Variables	**N**	**Mean**	**Std. Dev.**	**p25**	**Median**	**p75**
CAR	2,685	-0.0120	0.0658	-0.0469	-0.0132	0.0120
ROE	2,685	-0.0122	0.3739	-0.0013	0.0357	0.1137
MCAP	2,685	6.1092	2.9162	4.3663	6.0549	7.9958
Ease of Doing Business – State Level Rank	2,386	8.7016	4.4697	8.0000	8.0000	12.0000
TAX_AGGRESSIVE	2,685	0.0084	0.1028	0.0000	0.0000	0.0002
Cash	2,685	2.5363	8.5601	0.4289	0.7565	1.3548
STATE_GOV	2,685	0.1970	0.3978	0.0000	0.0000	0.0000
Pre_Ret	2,685	0.0988	0.2915	-0.0279	0.0284	0.2425
Escrow	2,685	0.0088	0.0177	0.0000	0.0003	0.0100
Segment	2,685	0.2313	0.4217	0.0000	0.0000	0.0000

Table 5 Pearson Correlations

This table reports Pearson correlations. *CAR* represents Cumulative Abnormal Return of firms (using market model with value-weighted return of firms listed on the BSE) during 5 days i.e. 3 days prior to event day to 1-day post event day. *ROE* is return on equity calculated as earnings after tax to net worth. *MCAP* is market capitalization of the firm. *TAX_AGGRESSIVE* is computed as disputed sales tax liability scaled by total revenue. *Cash* is the ratio of cash and cash equivalent to the current liabilities. *STATE_GOV* is a dummy that takes a value of 1 if the firm is registered in a state that has been ranked in the top quartile for ease of doing business by World Bank. *Pre_Ret* is a market adjusted return of the previous year. *Escrow* is a variable that controls for the statutory deposits with the government authorities scaled by firm size. *Segment* is a dummy variable that takes value of 1 if the firm operates in multiple product segments, and 0 otherwise. * denotes significance at 10% level.

	CAR	*ROE*	*MCAP*	*TAX_AGGRESSIVE*	*Cash*	*STATE_GOV*	*Pre_Ret*	*Escrow*
ROE	0.028							
MCAP	-0.062*	0.101*						
TAX_AGGRESSIVE	-0.035*	-0.132*	-0.030					
Cash	0.043*	-0.003	-0.139*	-0.013				
STATE_GOV	0.063*	0.001	-0.080*	0.035*	0.014			
Pre_Ret	-0.055*	0.050*	0.096*	0.001	-0.083*	-0.011		
Escrow	0.011	0.035*	0.087*	-0.009	-0.084*	0.013	0.047*	
Segment	-0.030	0.027	0.151*	-0.012	-0.055*	-0.039*	0.047*	0.027

Table 6 Cross Sectional Tests of the Firm-Level Stock Price Reaction

This table reports regression coefficients (*p*-value in parenthesis). *CAR* represents Cumulative Abnormal Return of firms (using market model with value-weighted return of firms listed on the BSE) during 5 days, i.e., 3 days prior to event day to 1-day post event day. *TAX_AGGRESSIVE* is computed as disputed sales tax liability scaled by total revenue. *Cash* is the ratio of cash and cash equivalent to the current liabilities. *STATE_GOV* is a dummy that takes a value of 1 if the firm is registered in a state that has been ranked in the top quartile for ease of doing business by World Bank. *Pre_Ret* is a market adjusted return of the previous year. *Escrow* is a variable that controls for the statutory deposits with the government authorities. *Segment* is a dummy variable that takes value of 1 if the firm operates in multiple product segments, and 0 otherwise. *ROE* is return on equity calculated as earnings after tax to net worth. *MCAP* is market capitalization of the firm. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

	(1)
	CAR
TAX_AGGRESSIVE	-0.0196***
	(0.001)
Cash	0.0002***
	(0.008)
STATE_GOV	0.0090**
	(0.012)
Pre_Ret	-0.0111**
	(0.030)
Escrow	0.0619
	(0.411)
Segment	-0.0029
	(0.433)
ROE	0.0061
	(0.106)
MCAP	-0.0011**
	(0.026)
Intercept	-0.0057
	(0.213)
N	2,685
R-sq	0.013

Tables 7 Robustness Analysis – Two-Stage Selection Model

This table reports regression coefficients (*p*-value in parenthesis). *CAR* represents Cumulative Abnormal Return of firms (using market model with value-weighted return of firms listed on the BSE) during 5 days, i.e., 3 days prior to event day to 1-day post event day. *TAX_AGGRESSIVE_dummy* is a dummy variable that takes value of 1 if the firm has disputed tax liability that is more than average of all the firm in the respective year, 0 otherwise *Prod_Diversity* is a dummy variable that takes value of 1 if the firm has product segments more than Industry median, 0 otherwise. *Proximity_HQ* is Proportion of plant located in the state same as that of head office location state. *Int_Ops* is foreign earnings as a proportion of total earnings. *Book_Tax_Diff* is Book-tax difference computed as per Manzon-Plesko (2002). Tax_Advice is a dummy variable that takes value of 1 if external auditor provides tax related services, 0 otherwise. *Prom_Hold* is percentage of shares held by the promoters. *BG* is dummy variable coded as 1 if the firm is affiliated to business group, 0 otherwise. *Z score* is Altman Z score computed using Altman (2005) model. *Corp_Gov* is a governance index computed using corporate governance code (Clause 49) issued by Securities Exchange Board of India (SEBI). *Tangibility* is ratio of tangible fixed assets as a proportion of total fixed assets. *R & D* is Research and development expenses as a proportion to total assets. *Escrow* is a variable that controls for the statutory deposits with the government authorities. *Lev* is financial leverage, defined as the ratio of debt to total assets. *MCAP* is market capitalization of the firm. *PB* is market price-to-book ratio. *ROE* is return on equity calculated as earnings after tax divided by net worth. *BIG4* is a dummy variable coded as 1 if a firm is audited by any of the big-4 auditor or its affiliate. Detailed variable definitions are provided in Appendix I. ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Panel A First Stage – Determinants of Indirect Tax Aggressiveness

First Stage	
	TAX_AGGRESSIVE_dummy
Prod_Diversity	0.145*
	(0.062)
Proximity_HQ	0.291***
	(0.002)
Int_Ops	-0.885***
	(0.000)
Book_Tax_Diff	1.286**
	(0.048)
Tax_Advice	0.186**
	(0.044)
Prom_Hold	0.409*
	(0.084)
BG	0.108
	(0.180)
Z-Score	-0.0712***
	(0.000)

Corp_Gov	-0.543*
	(0.068)
Tangibility	-0.838***
	(0.000)
R&D	-19.65*
	(0.051)
ESCROW	2.055
	(0.367)
Lev	-0.112
	(0.604)
PB	0.0203**
	(0.035)
MCAP	-0.0665***
	(0.006)
ROE	-0.258***
	(0.009)
BIG4	0.369***
	(0.000)
Intercept	-0.579
	(0.154)
N	12,066
R-sq	0.208

Panel B Second Stage – Market Reaction around the Passage of the GST Bill

	Basic Model	**Second Stage**
	(1)	**(2)**
	CAR	***CAR***
TAX_AGGRESSIVE_dummy	-0.0058**	-0.0057***
	(0.012)	(0.010)
Cash	0.0002**	0.0002**
	(0.013)	(0.021)
STATE_GOV	0.0092***	0.0093***
	(0.009)	(0.009)
Pre_Ret	-0.0109**	-0.0108**
	(0.030)	(0.031)
Escrow	0.0751	0.0774
	(0.321)	(0.309)
Segment	-0.0024	-0.0023
	(0.525)	(0.554)
ROE	0.0062	0.0062*
	(0.102)	(0.092)
MCAP	-0.0009*	-0.0009
	(0.072)	(0.111)
Lambda		-0.0003
		(0.792)
Intercept	-0.0060	-0.0059
	(0.180)	(0.185)
N	2,685	2,685
R-sq	0.014	0.014

Tables 8 Robustness Analysis – Regression Discontinuity Design

This table reports the treatment effect of *TAX_AGGRESSIVE* on firm-level abnormal returns centered on the passage of the GST Bill. Panel A presents differences in pre-treatment firm-level characteristics around the median value of *TAX_AGGRESSIVE* threshold, i.e., the median value of average disputed sales tax contingent liabilities deflated by total revenues. Thus, firms with non-zero values of *TAX_AGGRESSIVE* are divided into two partitions, firms that have value of *TAX_AGGRESSIVE* less than or equal to the sample median, and firms that have value of *TAX_AGGRESSIVE* greater than the sample median. Panel B presents the RD test results after controlling for covariates in Panel A. In Panel B, the optimal bandwidths defined in Imbens and Kalyanaraman (2012) are used for estimation. Z-statistics are presented in parentheses. ***, **, and * represent two-tailed p-value significance levels of 0.01, 0.05, and 0.1 respectively. All variables are defined in Appendix 1.

Panel A Comparison between full sample and the sub-sample containing firms with disputed sales tax contingent liabilities

Variables	N	Mean	Std. Dev.	p25	Median	p75
Total Assets (Full Sample)	2,685	17,035.1	102,739.2	323.4	1,486.4	6,831.6
Total Assets (Disputed Sales Tax Contingent Liability Sample)	710	29,713.1	98,975.6	1,423.5	5,122.3	18,626.5
Disputed Sales Tax Contingent Liabilities/Total Revenue	710	0.0318	0.1982	0.0014	0.0042	0.0125

Panel B Descriptive statistics for regression discontinuity sub-sample

	< Threshold	> Threshold	p-value for Test of Diff
TAX_AGGRESSIVE	0.0027	0.0077	0.000
Total Assets (INR Million)	7074.7	6481.1	0.396
Cash	1.33	1.02	0.441
STATE_GOV	0.19	0.22	0.721
Pre_Ret	0.1127	0.1966	0.051
Escrow	0.01	0.01	0.478
Segment	0.28	0.42	0.049
ROE	0.04	-0.01	0.327
MCAP	7.42	7.52	0.787
N	98	71	

Panel C Regression discontinuity test

	CAR
TAX_AGGRESSIVE	-0.0461 ***
	(0.006)
Controls	Yes
Observations	169
Kernel	Triangular